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THE 1962 FEED GRAIN PROGRAM
IN THE PACIFIC NORTHWEST

(An Appraisal of the Barley Program)

U. S. Department of Agriculture
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Feed grain supplies increased rapidly for several years prior to 1961. A reversal of this trend occurred as a result of the 1961 Emergency Feed Grain Program that encouraged U.S. farmers to divert 25.2 million acres of cropland from production of corn and grain sorghum.

In 1962, a similar program was again offered to corn and grain sorghum producers. To more effectively control feed grain production, however, a similar but separate program was offered to barley producers. In 1963, corn, grain sorghum, and barley were combined into one program.

These programs offered payments to farmers for reducing the acreage of feed grains, and prices were supported on production from their remaining acreage. The land taken out of feed grain could not be used for the production of any other crop or for grazing. Participation in the program was voluntary.

The study reported here was made to try to identify (1) factors associated with participation in the barley program, (2) effects of the program on production adjustment, and (3) likely response of farmers to alternative provisions of programs.

A random sample of 205 farmers were interviewed in 8 counties in Washington, Oregon, and Idaho; the sample included 48 participants and 157 nonparticipants. The sample was drawn from a list of all farmers eligible for participation in the program and included participants and nonparticipants in the proportions found in the sample counties.

Participation in the barley program was light; only 22 percent of the eligible farmers participated in it, compared with 41 percent of them participating in the corn-grain sorghum program. Participation in the barley program was about the same in the Pacific Northwest as in the country as a whole.

The size of farms (as measured by total land in farm) of participants averaged larger than those of nonparticipants, but the acreage of cropland averaged about the same on the two groups of farms. Feed grain bases averaged 163 acres on participating farms compared with 122 acres on nonparticipating farms. Normal yields were almost the same in the two groups; actual yields in 1962 were 10 to 20 percent above normal. On share-rented land, landlords received approximately a third of the crop and program payments; this division was nearly the same for participants and nonparticipants.

Wheat, barley, and peas were grown on about half of the cropland. Most of the remainder was fallowed, including 5 to 6 percent of the cropland on participant farms diverted under the feed grain program. Except for a larger barley base and more diverted acres on participating farms, there was little difference between participants and nonparticipants in the use of cropland.

Nonparticipants had more livestock--mostly beef-cow herds--but only 6 percent of the farms received as much as half of their net income from livestock. The proportion was nearly the same for participants and nonparticipants.

Because the market price of barley was as high as or higher than the support price and very few of the farms in the sample fed any appreciable quantities of barley, the support price offered little advantage to these farmers as individuals.

On farms in the feed grain program, the acreage of barley fertilized in 1962 was 14 percent greater than in 1961. In 1962, both participants and nonparticipants fertilized some three-fourths of their barley acreage with an average of around 37 pounds of nitrogen per acre fertilized.

One of the advantages of participation in a cropland diversion program is the savings in cash costs of production. Consequently, such programs would be more attractive to farms with high cash costs. However, cash costs per acre for materials bought and services hired were slightly lower on participants' farms. No comparisons were made of seed and machinery operating costs, but savings in these costs would be small on farms where most of the diverted acres are fallowed or seeded to a cover crop. On all farms, cash costs were low relative to the value of production.

Except for slightly higher participation among operators under 35 years of age, there was no correlation between age of operator and participation in the barley program. Neither was there any correlation between off-farm work and participation.

The proportion of farmers planning to participate in the 1963 Feed Grain Program was about the same as in the 1962 program, but the composition of participants changed appreciably. Only half the farmers in the 1962 program planned to participate in 1963, but these dropouts were fully offset by nonparticipants in 1962 planning to participate in 1963. About 60 percent of the 1962 nonparticipants planning to participate in 1963 said they were participating because changes in the program made it more attractive.

About half the farmers said that if the term of a future program were changed they would prefer a 5-year program to annual programs. The proportion was slightly higher among 1962 nonparticipants.

THE 1962 FEED GRAIN PROGRAM IN THE PACIFIC NORTHWEST
(An Appraisal of the Barley Program)

By

James Vermeer, Agricultural Economist

INTRODUCTION

During the decade that ended in 1961, feed grain production exceeded its consumption, export, and all other uses. Stocks of feed grain on hand October 1, 1961, were at the alltime high of 85 million tons. Prices of feed grains were supported at levels that prevented utilization of all grains produced, and limitations on production were either ineffective or nonexistent.

The problem of excess production of feed grain was aggravated by measures taken to relieve surpluses of other commodities. Programs designed to restrict production of wheat, cotton, and other allotment crops effectively prevented farmers from using land for these crops but placed no restriction on the use of land for other purposes. For many farmers, production of feed grains, especially grain sorghum and barley, was the best alternative to allotment crops. Consequently, the acreages of these crops expanded rapidly. The use of new technology was also spreading rapidly so that yields per acre of feed grains were increasing at the same time that the acreage was expanding.

The reinstitution of acreage allotments and marketing quotas for wheat in 1954 caused the acreage of barley to expand rapidly in the Pacific Northwest States of Washington, Oregon, and Idaho. Wheat allotments reduced the acreage that could be used to grow wheat, but placed no limitation on other uses of the land. As barley was the best alternative to wheat on many farms in the area, many acres were diverted to barley. Farmers in the 3 States seeded 782,000 acres of barley for harvest in 1953. By 1961, barley acreage had expanded to 1,864,000 acres. The expansion of barley production in this area and other areas increased the national problem of balancing production of feed grains with sales at prices considered fair to farmers.

Up to 1961, the expansion of feed grain production in the Pacific Northwest only kept pace with the expansion of the livestock industry in the area. In 1960 and 1961 (the years immediately preceding the barley program), production of feed grains in Washington, Oregon, and Idaho was slightly less than the quantities fed to livestock in the 1960-61 and 1961-62 feeding years. In the next 2 years, however, barley production exceeded the amount fed to livestock despite the barley program. 1/

Only two-fifths of the farms in the area produced barley in 1959, according to the 1959 Census of Agriculture, and most of them produced it as a cash crop. Only a

1/ Hodges, Earl F. Livestock Feed Relationships, 1909-63. Statis. Bul. 337, Econ. Res. Serv., U.S. Dept. Agr. Nov. 1963, and Supplement of Nov. 1964.

small part of the barley was fed on the farm growing it, but nearly all of it was fed on other farms in the area.

In 1961, a voluntary program was offered to farmers to encourage them to reduce feed-grain production. This program encouraged producers of corn and grain sorghum to reduce production by offering (1) payments for diverting land from production of these crops to conserving uses and (2) price supports on the grain grown on their remaining acreage. A similar program was offered in 1962; and, in addition, a separate program designed to reduce barley production was offered to barley producers.

The 1962 Feed Grain Program

The 1962 Feed Grain Program for barley was offered to farmers to induce them to stop or reverse expansion in barley production. The program was similar to one offered to corn and grain sorghum producers in 1961 and extended to 1962. Participation in the programs was voluntary.

To obtain the benefits of the program, including price supports and diversion payments, farmers were required to divert at least 20 percent of their base acreage of barley (the base for each farm was the average acreage of barley grown in 1959-60) to conserving use. Farmers could divert (1) up to 20 acres plus 20 percent or (2) 40 percent of their bases, whichever was larger.

Payments for diverting the first 20 percent were equal to 50 percent of the farm's normal yield times the local support price. For diversion from 20 percent to 40 percent, payment per acre was 60 percent of normal yield times support price. For diversion above 40 percent, payments were again at the 50 percent rate.

A farm's normal yield was the 1959-60 county average yield adjusted by an index relating the productivity of the farm to the average productivity of all farms in the county. This productivity index was established by the county Agricultural Stabilization and Conservation (ASC) Committee.

Farmers complying with provisions of the program could obtain support price for their barley by either obtaining a nonrecourse loan from the Commodity Credit Corporation (CCC) or executing a purchase agreement permitting them to deliver their barley to CCC at the local support price. Support price was available for a quantity of production equal to the normal yield on the permitted acreage of barley. The U.S. average support price for barley was \$0.93 a bushel. In the Pacific Northwest area, local support price ranged from 4 cents to 14 cents above the national average.

Purpose and Method of Study

The study furnishing the basis for this report was made to examine (1) the effectiveness of provisions of the 1962 Feed Grain Program in reducing production of barley in one area, and (2) ways in which the program could be made more effective. Some of the factors that were assumed to have a bearing on participation in the

program and adjustment of feed grain production were size of farm, acres of cropland, numbers of livestock, size of feed grain base, productivity of the land, and the age and off-farm work of the operator. These characteristics of participants and non-participants were compared in a search for factors related to participation in the program. Effectiveness of the program in obtaining adjustments was measured by changes in land use and changes in the use of other resources, especially fertilizer and operator labor. Farmers were questioned about their likely response if the provisions of the program--such as reducing or increasing the payments and extending the program from a 1-year to a multiyear program--should be changed. Farmers were also questioned about their plans for participating in the 1963 Feed Grain Program which differed substantially from the 1962 program.

Analysis of the barley program in the Pacific Northwest is part of a broader study of the 1962 Feed Grain Program. Studies were conducted in 3 other areas: The Corn Belt, the Texas High Plains, and in North Carolina (fig. 1). The purpose of the study in each area was to obtain information on characteristics of farms in the program, how they compared with other farms in the area, what adjustments in farming were associated with participation, and the effect of participation on farmers' incomes.

The Sample

The study in the Pacific Northwest was made in 8 counties in Western Idaho, Eastern Washington, and Northeastern Oregon (fig. 2). The 205 farmers interviewed were selected by random sample; they included 48 farmers participating in the 1962 program and 157 not participating. The sample was drawn from farmers who, because they were growing barley in 1959 or 1960, were eligible to participate in the program in 1962. These farms were identified in the Agricultural Stabilization and Conservation Service (ASCS) county office records as farms having feed grain bases.

The distribution between participants and nonparticipants in the sample was similar to the distribution between these 2 groups in the 8 counties from which the survey sample was drawn. The 205 farms in the sample had feed grain bases totaling about 27,000 acres. About 29 percent of these base acres were in the 1962 barley program, compared with 30 percent of the bases in the barley program in the 8 counties.

PARTICIPATION IN THE 1962 BARLEY PROGRAM

In the United States as a whole, participation in the barley program was lower than in the corn-grain sorghum program. About 22 percent of the eligible farms participated in the 1962 barley program, compared with 41 percent in the 1962 corn-grain sorghum program. In the 3 Pacific Northwest States, 19 percent of the eligible farmers participated in the barley program; but of the farms included in the sample, 23 percent participated in the program.

Another measure of participation is the proportion of the base acreage on farms in the program. By this measure, also, participation was lower among barley producers than among corn and grain sorghum producers. About 36 percent of the barley base acreage in the United States was on farms in the 1962 program, compared

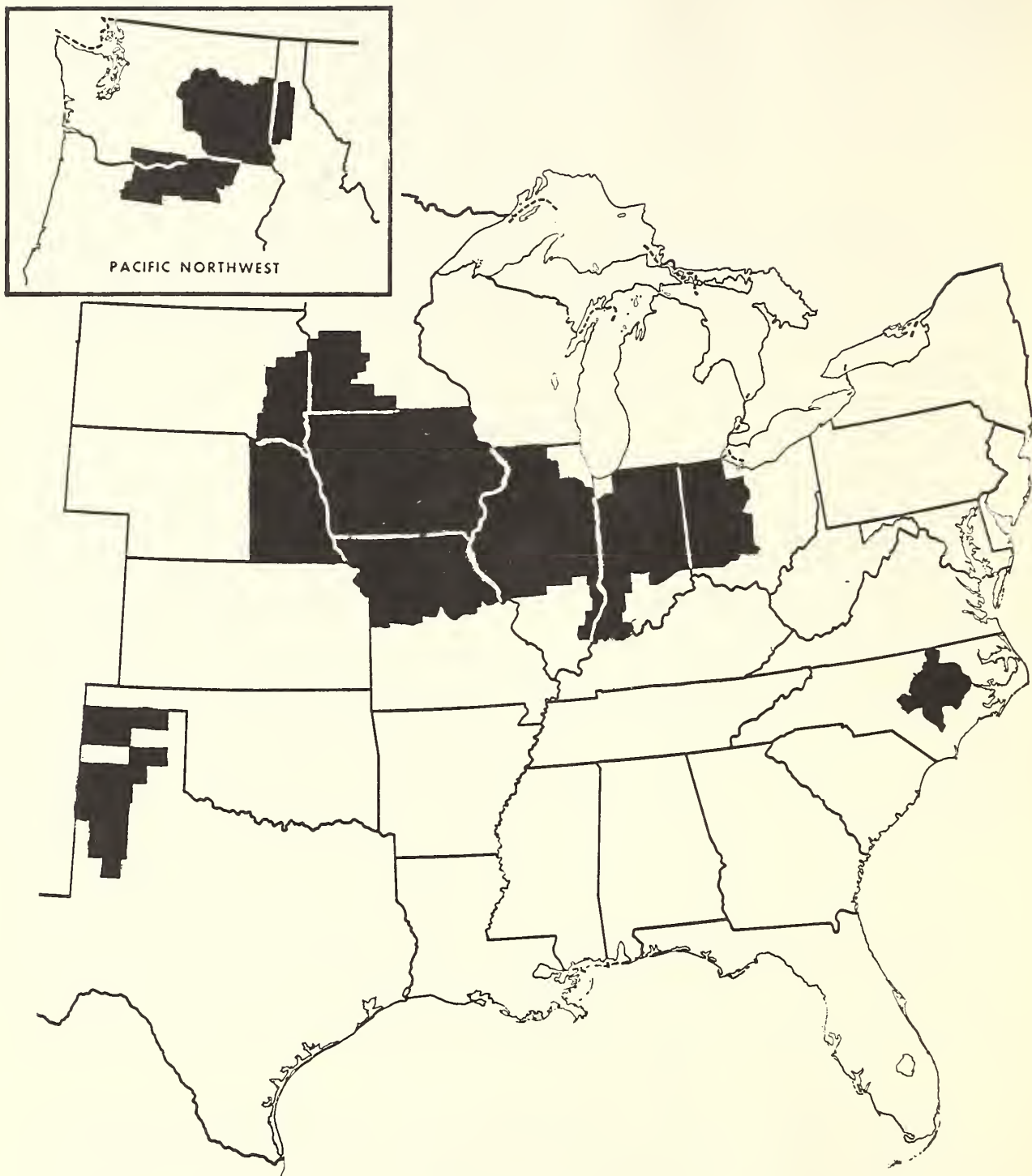
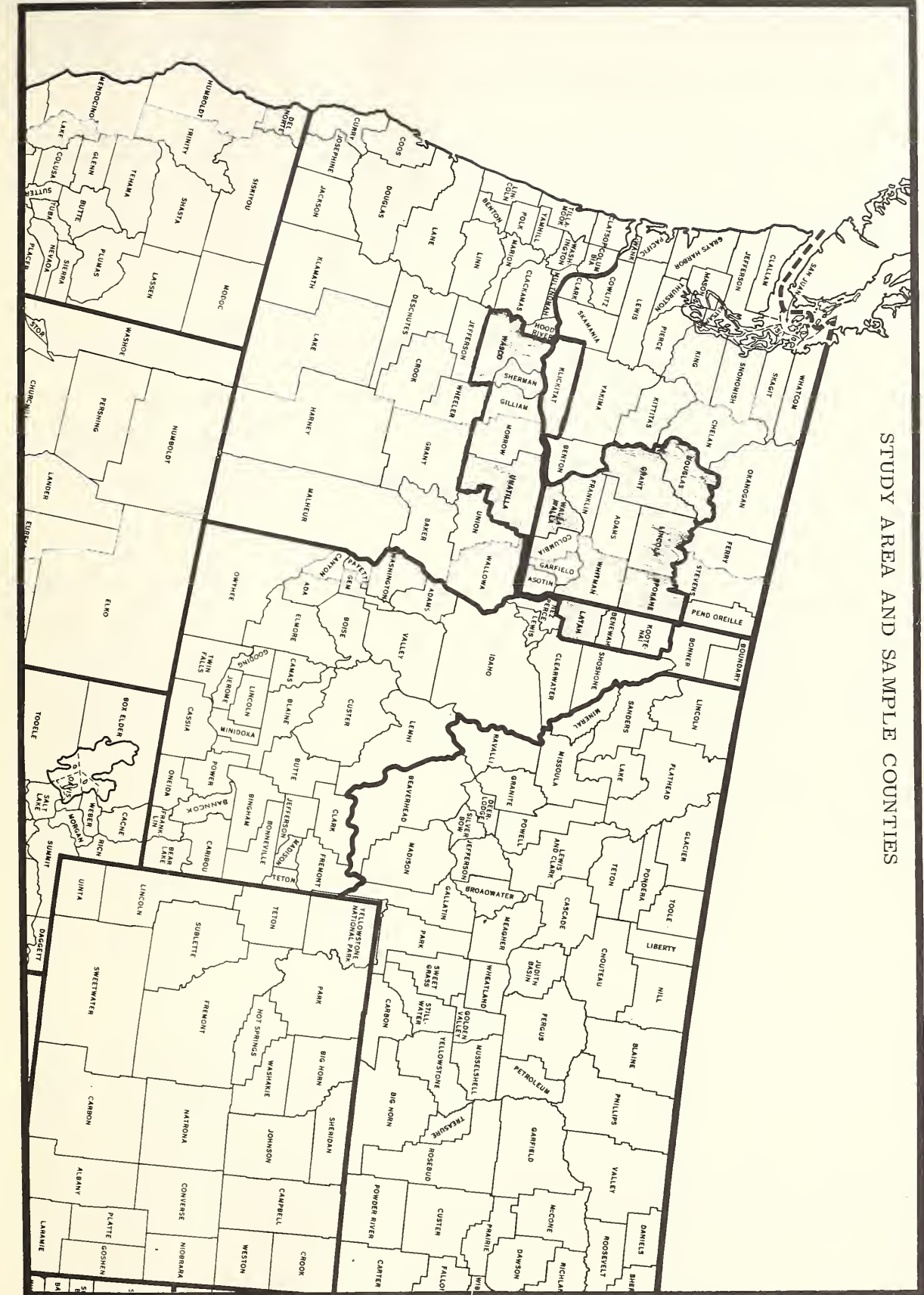


Figure 1

STUDY AREA AND SAMPLE COUNTIES



with 55 percent and 69 percent for corn and grain sorghum, respectively. In the 3 Pacific Northwest States, about 32 percent of the barley base acreage was in the program, and on farms in the sample, 29 percent of the base acreage was on participating farms.

About 28 percent of the base on sample farms in the program was diverted to conserving uses. This was a little lower than the 34-percent diversion on all participating farms in the 8 counties from which the sample was drawn. Average diversion per farm was about 46 acres, for which farmers received an average payment of \$21.40 an acre, or nearly \$1,000 per farm. About 10 percent of the participants diverted all of their base (table 1); only 90 percent of the participants produced barley in 1962.

Table 1.--Acreage diverted and diversion payments by tenure, 1962 Feed Grain Program, Pacific Northwest

Item	All farms	Cropshare rented farms	Part cropshare rented farms	All other farms
Average acres diverted-----	46.1	53.2	65.4	38.2
Percentage of base diverted-----	28	30	25	29
Percentage of farms growing: barley, 1962-----	90	100	80	85
Average diversion payment, per farm-----	\$987	\$1,156	\$1,434	\$791
Per acre diverted-----	\$21.40	\$21.70	\$21.90	\$20.70
Landlords' share of diversion payment on cropshare rented land, percent-----	---	34	38	---

DESCRIPTION OF FARMS

Most of the farms in the sample were owner-operated, but 38 percent were operated by tenants who share-rented some or all of their land (table 2). More than three-fourths of the farms usually received more than half of their net income from the production and sale of crops; these are identified as "cash crop farms" in table 2. About 18 percent of the farms usually received more than half their net income from a combination of crop and livestock production, mostly beef cattle; and only 6 percent were chiefly livestock farms. Barley is produced mainly as a cash crop. Thus, more than three-fourths of the farms in the sample would benefit from higher prices for barley.

Table 2.--Distribution of farms in the sample by participation in the 1962 Feed Grain Program, tenure, and type of farm, Pacific Northwest

Item	Tenure group			
	Cropshare rented farms	Part cropshare: rented farms	All other farms	All farms
Number of participants-----	17	5	26	48
Number of nonparticipants-----	36	19	102	157
Total number-----	53	24	128	205
Percent-----	26	12	62	100
	Type-of-farm group			
	Cash crop farms	Livestock farms	Cash crop: and livestock: farms	All farms
Number of participants-----	42	3	3	48
Number of nonparticipants-----	114	9	34	157
Total number-----	156	12	37	205
Percent-----	76	6	18	100

Less than one-fourth of the eligible farmers in the sample participated in the 1962 Feed Grain Program (table 3). Participation was highest among farmers renting all their land on a cropshare basis and among those receiving most of their income from the sale of crops, but only 37 percent of the share-rented cash crop farms participated in the program in 1962.

One reason for the relatively low participation was the strong demand for barley from this area. The support price for barley in the counties in the sample ranged from \$2.02 to \$2.25 per hundredweight. For most of these counties, the estimated market price for 1962 crop feed barley was as high as or higher than the support price. For most farmers, returns above variable cash costs from producing barley probably were higher than the diversion payments.

A little less than one-fourth of the farmers received a substantial part of their net incomes from the production and sale of livestock, but most livestock farmers did not participate in the feed grain program. Only about 6 percent of the participant and nonparticipant farms received more than half of their net incomes from livestock. Of the 205 farms in the sample, only 31 fed cattle, 15 fed lambs, and 11 raised hogs.

Table 3.--Participation in the 1962 Feed Grain Program, by tenure and type of farm, Pacific Northwest

Tenure	Type of farm			
	Cash crop	Cash crop and livestock	Livestock	All types
	<u>Percent</u>	<u>Percent</u>	<u>Percent</u>	<u>Percent</u>
Cropshare rented farms---	37	0	0	32
Part cropshare rented farms-----	24	0	0	21
All other farms-----	23	10	30	20
All tenure groups---	27	8	25	23

The small number of farms other than crop farms in the sample precluded any meaningful analysis by type of farm.

Although total land in farms of participants averaged 53 acres larger than for nonparticipants, this difference in size probably was not significant. Acres of cropland per farm of participants was less than 2 percent larger than for nonparticipants (table 4). A comparison of size of farms among tenure groups shows that farms of participants operating both owned and rented land were about 40 percent larger than those of nonparticipants in the same tenure group. But among the "all other farms," which are mostly owner-operated farms and are the most numerous tenure group in the sample, the farms of nonparticipants were slightly larger. The Pacific Northwest is the only area of the four studied in which farms of participants are not significantly larger than those of nonparticipants.

Farms participating in the feed grain program had barley bases^{2/} averaging 163 acres, compared with 122 acres for nonparticipants. One could speculate about the causal relationship between larger feed grain bases and participation in the program, but evidence is lacking to develop a reasonable hypothesis of the relation between size of base and participation.

Normal yields of barley, which determine farm-to-farm differences in diversion payments, averaged about the same for participants and nonparticipants. Actual yields in 1962 averaged slightly higher for participants; they were about 15 to 20 percent above normal yields for both groups of farms. One hypothesis tested was

^{2/} The average acreage of barley grown in 1959-60.

Table 4.--Relation of size of farm, feed grain base, and yields by tenure of operator and participation in the 1962 Feed Grain Program, Pacific Northwest

Item	Participants				Nonparticipants			
	All farms	Cropshare: rented farms	Part cropshare: rented farms	All other farms	All farms	Cropshare: rented farms	Part cropshare: rented farms	All other farms
Total number of farms----	48	17	5	26	157	36	19	102
Total farmland, acres per farm-----	1,113	1,040	2,091	973	1,060	971	1,482	1,013
Total cropland, acres per farm-----	847	792	1,567	745	834	776	1,225	782
As a percent of all cropland-----	76	76	75	77	79	80	83	77
Feed grain base, acres per farm-----	163	180	264	132	122	126	175	110
As a percent of all cropland-----	19	23	17	18	15	16	14	14
Normal yield of barley: All farms, bushel-----	39.3	41.1	41.2	37.8	39.6	40.5	41.8	38.8
All farms growing barley, 1962, bushel----	40.1	---	---	---	39.3	---	---	---
1962 average yield of barley-----	48.2	---	---	---	45.7	---	---	---
1962 average yield as a percent of normal yield--	120.2	---	---	---	116.4	---	---	---
Farms in CR program, ^{1/} percent-----	7	---	---	---	8	---	---	---
Acres in CR program, per farm in program----	149	---	---	---	148	---	---	---

^{1/} Conservation Reserve Program.

that normal yields assigned to participants' farms were higher relative to the productivity of the land than on nonparticipants' farms and, therefore, participants would have a stronger incentive to participate, but the evidence does not support this hypothesis.

Under the usual division of crops and costs on cropshare leased land, most of the landlord's costs are fixed costs, whereas, the tenant pays most of the variable costs. Diversion under the feed grain program usually reduces variable costs more than it reduces fixed costs. Consequently, participation would be relatively more profitable for tenants than for landlords. Therefore, some justification exists for expecting the landlord's share of the diversion payments to be larger than his share of the crop.

Landlords of both participants and nonparticipants received about a third of a crop on share leased land. Also, landlords on participants' farms received a third of the diversion payments. Thus, on the basis of 1 year's experience, there is no indication that the share of Government payments going to tenants was reduced in exchange for the landlord's cooperation in a program that was more advantageous to tenants.

There was no correlation between participation in the feed grain program and in the Conservation Reserve (CR) Program. The proportion of farms in the CR program, and the acreage in the program per farm were about the same for both participants and nonparticipants in the 1962 Feed Grain Program.

Land Use in 1962

The major crops grown in the area include wheat, barley, and peas. These 3 crops accounted for 90 to 95 percent of the crops harvested in 1962 (table 5). About 40 percent of the cropland was fallow in 1962 as part of a regular rotation. In addition, participants diverted 5 to 6 percent of their cropland under the feed grain program, and most of the diverted acres lay fallow in 1962.

Except for a slightly smaller proportion of the cropland used for barley and more diverted acres on participants' farms, the pattern of land use was about the same for participants and nonparticipants (table 6). ^{3/} The data do not indicate any relationship between participation in the feed grain program and land use or tenure. Farms with both owned and share-rented land used a smaller proportion of the cropland for barley production compared with all cropshare rented farms, but this was true for both participants and nonparticipants.

^{3/} Some nonparticipants in the feed grain program diverted land under the wheat program.

Table 5.--Land use in 1962, by participation in the 1962 Feed Grain Program, Pacific Northwest

Land use	Participant	Nonparticipant
	All farms	All farms
	<u>Acres</u>	<u>Acres</u>
Barley-----	102.4	133.8
Oats-----	4.4	8.9
Wheat-----	250.1	240.4
Peas-----	51.9	45.4
Lentils-----	1.1	12.9
All other crops-----	3.6	7.3
Diverted acres-----	48.3	6.1
Tame hay-----	21.1	20.3
Rotation pasture-----	10.1	15.3
Idle, failure-----	10.2	11.7
Summer fallow-----	344.1	331.7
Total cropland-----	847.3	833.8
Permanent pasture-----	12.1	13.6
Total farmland-----	1,113	1,060

Livestock on Farms

Livestock production is relatively unimportant on farms in the sample, and it is of less significance among participants. Participants had an average of about 9 grain-consuming animal units per farm compared with 23 for nonparticipants (table 7). Beef raising was the most common livestock enterprise. Just over half of both participants and nonparticipants had some beef cows. On January 1, 1963, participants with beef cow herds averaged 21 cows per farm compared with 34 cows per nonparticipant farm.

TAKING ADVANTAGE OF THE SUPPORT PRICE

For the United States as a whole, most of the feed grains are fed on the farm where produced. Also, the support price for 1962 crop feed grains was several cents per bushel above the market price, and farmers frequently could profit by pledging their own grain as security for a nonrecourse loan and by buying other grain for feed.

In the Pacific Northwest area, however, neither of these conditions prevailed in 1962. Only 9 percent of the farmers in the sample fed as much as or more grain than they produced, and the expected market price for barley was about the same as the support price. Consequently, farmers had little to gain from the price support feature of the program.

About 90 percent of the sample participants in the 1962 Feed Grain Program sold some or all of their 1962 crop barley, and none of them expected to buy any grain for

Table 6.--Use of cropland, 1962, by participation in the 1962 Feed Grain Program, and tenure, Pacific Northwest

Land use	Participants				Nonparticipants			
	All farms	Crop-share rented farms	Part crop-share rented farms	All other farms	All farms	Crop-share rented farms	Part crop-share rented farms	All other farms
	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent
Barley-----	12.1	14.1	10.6	11.2	16.0	20.3	15.2	14.8
Oats-----	.5	.3	.7	.6	1.1	2.9	.6	.6
Wheat-----	29.5	30.1	26.8	30.2	28.8	28.1	28.8	29.1
Peas-----	6.1	5.7	12.0	4.0	5.5	9.2	10.1	2.8
Lentils-----	.1	0	0	.3	1.5	3.0	2.1	.8
All other crops-----	.4	0	0	.9	1.0	1.3	1/	1.0
Diverted acres-----	5.7	7.0	4.0	5.5	.7	.3	.4	1.0
Tame hay-----	2.5	2.8	3.3	2.0	2.4	1.6	1.2	3.1
Rotation pasture-----	1.2	.9	0	1.8	1.8	.5	4.9	1.4
Idle and failure-----	1.2	0	3.6	1.1	1.4	.2	1.8	1.7
Summer fallow-----	40.7	39.1	39.0	42.4	39.8	32.6	34.9	43.7
All cropland-----	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

1/ Less than half of 1 percent.

Table 7.--Farms reporting livestock, number and production per farm by participation in the 1962 Feed Grain Program, Pacific Northwest

Kind of livestock	Participants		Nonparticipants	
	Farms reporting	Average per farm reporting	Farms reporting	Average per farm reporting
	Percent	Number	Percent	Number
Milk cows, Jan. 1, 1963-----	29	14.2	21	4.2
Beef cows, Jan. 1, 1963-----	54	21	53	34
Fed cattle sold in 1962-----	17	7	14	23
Other cattle sold in 1962-----	33	16	41	28
Cattle pastured on contract, 1962-----	0	---	1	285
Cattle fed on contract, 1962-----	0	---	1	616
Ewes, Jan. 1, 1963-----	10	11	6	27
Fat lambs sold in 1962-----	10	21	5	35
Hogs raised in 1962-----	4	6	7	119
Feeder pigs sold in 1962-----	4	66	10	95
Feeder pigs bought in 1962-----	2	150	4	83
Total grain-consuming animal units 1/ 2/	---	9.4	---	23.3

1/ Weights used to convert livestock to grain-consuming animal units were as follows: Milk cows on hand Jan. 1, 1.020; beef cows on hand Jan. 1, 0.167; fed cattle sold, 1.000; other cattle sold, 0.154; cattle pastured on contract, 0.080; cattle fed on contract, 1.020; ewes on hand Jan. 1, 0.022; fat lambs sold, 0.120; hogs raised, 0.712; feeder pigs sold, 0.332; feeder pigs bought, 0.380.

2/ Excludes poultry.

feed in the 12 months beginning October 1, 1962. Among nonparticipants, 82 percent sold some barley from the 1962 crop; and only 6 percent expected to buy any grain for feed in the 12 months after harvest. Thus, a few barley producers might have stayed out of the program because they needed the feed for their livestock operations. But under existing price-cost relationships, they could grow it cheaper than they could buy it, and the support price offered no incentive over market price.

EFFECTS OF PARTICIPATION ON THE USE OF FERTILIZER

The acreage of barley fertilized in 1962 on farms in the feed grain program increased sharply over the acreage fertilized in 1961 before the program. The percentage of farmers applying fertilizer on barley in 1962 and the increase in that percentage from 1961 to 1962 were about the same for participants and nonparticipants (table 8). However, the acreage fertilized per participant using fertilizer rose 14

Table 8.--Use of fertilizer on barley, 1961 and 1962, by participation in the 1962 Feed Grain Program, Pacific Northwest

Item	Participants		Nonparticipants	
	1961	1962	1961	1962
Farms using fertilizer on barley, percent-----	54	67	57	68
Acres fertilized per farm reporting-----	102	116	154	145
Percent of all acreage fertilized-----	---	75	---	73
Plant nutrient applied per acre fertilized:				
N-----	37	38	37	37
P ₂ O ₅ -----	0	0	25	25
K ₂ O-----	0	0	0	0
Total-----	37	38	37	36

percent despite some diversion under the program, whereas the acreage fertilized per nonparticipant declined about 6 percent. Part of the increase from 1961 to 1962 in the acreage fertilized by participants may have been a catching-up process. In 1962, participants fertilized about 75 percent of their barley acreage. This was not appreciably different from the 73 percent fertilized by nonparticipants. There was no difference between participants and nonparticipants in the quantity of plant food applied per acre; neither was there any appreciable change from 1961 to 1962 in this rate of fertilization.

USE OF DIVERTED ACRES

Participation in the feed grain program required that the acreage diverted be used in an approved conserving manner. Generally, the approved use for this area included seeding a cover crop, leaving a cover crop already established, or cultivated summer fallow. About 60 percent of all the diverted land was fallowed, nearly one-third was seeded to a cover crop, and the remainder, about 8 percent, was left idle (table 9). On the share-rented farms the acreage seeded to a cover crop was nearly

Table 9.--Conservation practices applied to diverted acres by tenure,
Pacific Northwest

Tenure	Left in estab- lished grass	Seeded to a cover crop	Left idle	Culti- vated fallow
	<u>Percent</u>	<u>Percent</u>	<u>Percent</u>	<u>Percent</u>
Tenure group:				
Share-rented farms-----	0	46	5	49
Part share-rented farms-----	0	17	0	83
All other farms-----	0	23	13	64
All farms-----	0	32	8	60

as great as the acreage fallowed. But on farms where some or all of the land was owned, cultivated fallow was the chief practice on diverted acres.

CASH COSTS OF PRODUCTION

One of the economic factors that farmers are likely to consider in their decisions about participation in a crop-diversion program is the relation of the diversion payment to the difference between the expected value of the crop and the cash costs of production. If the diversion payment is greater than the expected return above cash costs, this will influence a farmer toward participation in the program.

Cash costs of production usually include costs (or value) of seed, fertilizer and other chemicals, custom work, fuel and lubricants, machinery repairs, and any additional hired labor needed to produce a crop on the acres that might be diverted. If farmers estimate that their cash costs will be high, they will be more likely to participate in the crop-diversion program.

Farmers included in the survey were asked to estimate their costs of purchased materials and hired services used directly in the production of barley. These estimates and seed costs are relatively easy to make compared with estimating costs of fuel, machinery repairs, and hired labor, which usually are applied to several enterprises and can be charged to one enterprise only if an adequate method of allocation is available.

Fertilizer cost was the largest single item of cash cost of producing barley. It averaged about \$4.00 per acre of barley fertilized, and about three-fourths of the barley acreage was fertilized in 1962 (table 10). Nonparticipants spent slightly more for fertilizer, but there was little difference between participants and nonparticipants in the proportion of the acreage fertilized.

Table 10.--Materials bought and services hired to produce barley in 1962, by participants and nonparticipants in the 1962 Feed Grain Program, Pacific Northwest

Item	Farms using	Acres covered	Cost per acre	Land- lord's share of cost ^{1/}
	Percent	Percent	Dollars	Percent
Fertilizer:				
Participants-----	67	75	3.68	35
Nonparticipants-----	66	73	4.17	32
2, 4-D and other herbicides:				
Participants-----	71	75	.73	22
Nonparticipants-----	59	61	.86	15
Insecticides:				
Participants-----	---	---	---	---
Nonparticipants-----	2	2	1.06	0
Custom spraying:				
Participants-----	6	22	1.00	15
Nonparticipants-----	7	13	1.00	0
Custom combining:				
Participants-----	0	0	---	---
Nonparticipants-----	5	4	7.12	0
Crop insurance:				
Participants-----	33	32	.63	20
Nonparticipants-----	33	35	1.01	8
Total, all farms:				
Participants-----	---	---	3.73	26
Nonparticipants-----	---	---	4.36	21

^{1/} On crop-share rented land.

Other cash costs incurred by many farmers included purchase of 2, 4-D or other weedkillers, and crop insurance. Cash costs of materials bought and services hired for the production of barley averaged \$3.73 per acre of barley produced by participants, and \$4.36 for nonparticipants. Landlords' share of these costs on crop-share rented land averaged about one-fourth of the total.

One hypothesis being tested was that farmers would participate in the feed grain program in order to partly retire or because they had off-farm jobs or obtained off-farm jobs after diverting some of their cropland under the feed grain program. To test this hypothesis, information was obtained on the age and off-farm work of operators. However, neither of these factors appeared to be related to participation.

Age of Operator

Except for slightly higher participation among the younger operators, those less than 35 years of age, there was no correlation between age and participation (table 11). In each of the other age groups, 22 percent to 24 percent of the farmers participated in the program in 1962. The average age of participants was 48 years; and for nonparticipants it was 49 years.

Table 11.--Age of farm operators by participation in the 1962 Feed Grain Program, Pacific Northwest

Age group	Farmers in sample	Participants	Nonpartici- pants
	<u>Number</u>	<u>Percent</u>	<u>Percent</u>
Under 25 years-----	1	0	100
25 to 34 years-----	25	32	68
35 to 44 years-----	50	22	78
45 to 54 years-----	68	22	78
55 to 64 years-----	44	23	77
65 years and older-----	17	24	76
Average age-----	---	48.1	49.0

Off-farm Work

About 17 percent of all farmers in the sample worked off their farms in 1962. The proportion was about the same for participants in the feed grain program and for nonparticipants. About a fourth of the operators who rented all of their land from others worked off their farms part of the time in 1962; this proportion was the same for participants and nonparticipants.

Participants with off-farm jobs averaged 27 weeks of such work in 1962 compared with 20 weeks for nonparticipants.

Of the 205 farms in the sample, 23 percent participated in the 1962 Feed Grain Program, and 26 percent planned to participate in the 1963 program. Although the proportion planning to participate in 1963 was not greatly different from the proportion participating in 1962, the composition of the two groups changed appreciably. Only half the farmers in the 1962 program planned to participate in 1963, but the drop-out of participants was more than offset by nonparticipants in 1962 planning to participate in 1963.

The survey was made just before and during the first weeks of the signup for the 1963 program, so that most farmers had been considering the question at the time of the survey. The large shift from participant to nonparticipant status, and vice versa, probably reflects both the changes in provisions of the 1963 program from those prevailing in 1962, and changes in farmers' situations. Farmers whose fall-seeded barley came through the winter in good condition probably decided against participation, whereas those whose barley seedlings suffered winter damage decided to participate.

To check on the reliability of using farmers' intentions as a basis for estimating actual participation, these intentions as stated in the spring of 1963 were compared with actual participation. The comparison was made by comparing the percentage of farmers planning to participate with the percentage actually participating, and not by comparing each farmer's statement regarding participation with his performance. Actual participation in 1963 included 24 percent of the farms (measured as a percentage of the base acreage on all eligible farms) in the 8 counties compared with 26 percent of the farmers in the sample planning to participate.

Of the 26 percent of farmers planning to participate in 1963, nearly three-fifths would divert the minimum 20 percent of their base acreage to qualify for price support loans and payments; an additional one-third would divert the maximum of 40 percent; and the remaining 8 to 10 percent would divert an acreage between the minimum and the maximum permitted under the program. There was no difference in the planned level of diversion in 1963 between farmers in the 1962 program and those who were not.

Major changes from the 1962 Feed Grain Program to the 1963 program were the lower diversion payments for minimum diversion and the addition of a price support payment averaging 14 cents per bushel of normal production on the permitted acreage of barley. These changes made the 1963 program more attractive for some farmers and less attractive for others. Farmers planning to participate in the 1963 program were asked if they would participate in a program with the same provisions as the 1962 program. Only half of the farmers responding would participate in a 1962-type program. Of those participating in 1962, 65 percent would participate in 1963 if the program remained unchanged. But of those who had not been in the 1962 program, only about 40 percent would participate in a 1962-type program. Thus, the 1962-type program with higher diversion payments and no price support payments was less attractive to farmers than the 1963 program with lower diversion payments but having the additional incentive of a price support payment. Also, when asked directly, half the farmers said the price support payment was the determining factor in their decision to participate in 1963.

Two-thirds of the farmers planning to stay out of the 1963 program reported that producing barley on the additional acres would be more profitable than program participation. Other reasons given for nonparticipation included objections to all farm programs (reported by 18 percent), improper administration (including assigned feed grain bases and normal yield considered too low), and lack of information about the program. Thus, according to farmers' analysis, the economics of participation (or nonparticipation) was by far the most compelling force in their decisions. Only a few objected to the program on ideological grounds.

RESPONSE TO ALTERNATIVE PROGRAM PROVISIONS

In an attempt to find alternatives to existing feed grain programs that would either increase participation and make the programs more effective, or reduce cost, or both, farmers were questioned about their likely response to modifications in present programs. One hypothesis tested was the possibility of replacing the annual programs with a 5-year program. Slightly more than half the farmers would favor such a change. Those who opposed a 5-year program were asked to specify the length of program they would prefer, and nearly all favored 1-year programs. The proportion favoring a 5-year program was slightly higher among farmers not participating in 1962.

